2026 CSTA PK–12

COMPUTER SCIENCE STANDARDS

Validated Alignment of PLTW Principles of AI

PLTW Principles of AI (PAI)

This interdisciplinary course introduces students to the foundational concepts, application, and ethical considerations of artificial intelligence. Through hands-on/minds-on activities, real-world applications, and project-based learning, students explore the capabilities of AI, its risks and benefits, and responsible use inside and outside the classroom. Students practice prompt engineering and learn to use Generative AI and language models to research, learn, and create solutions to relevant problems. Students also learn how AI works, exploring data collection and organization, classifiers, and algorithms in fun and engaging projects. The curriculum prepares students to critically engage with AI technologies, consider societal impact, and discover meaningful applications of AI in today's workforce.

Learn more: https://www.pltw.org/curriculum/pltw-computer-science

Alignment Summary

In June 2026, CSTA conducted a rigorous, independent process to validate how these curricular materials align to the 2026 CSTA PK-12 Standards. This process included reviews by multiple independent experts in the CSTA PK-12 Standards, CS teaching, and CS curriculum design. The findings are presented below in two formats: high-level tables summarizing alignment of the curriculum to each concept and/or specialty area, and more granular tables indicating alignment to each standard. Note that the data below reflects only standards that are fully aligned; in many cases, there is partial alignment not indicated below.

High School Foundation

Concept	Aligned Standards	Total Standards	Percent Aligned
Algorithms & Design	5	11	45%
Programming	2	9	22%
Data & Analysis	3	8	38%
Systems & Security	3	9	33%
Computing & Society	5	9	56%
Overall	18	46	39%

High School Specialty

Specialty Area	Level	Aligned Standards	Total Standards	Percent Aligned
Artificial Intelligence	Specialty I	7	14	50%

Alignment to High School Foundational Standards

Algorithms & Design

Identifier	Standard	Fully Aligned?
HS-ALG-PS-01	Design an algorithm using appropriate data structures to solve a problem or express an idea.	
HS-ALG-PS-02	Optimize the design of an algorithm using procedural abstraction and control structures.	
HS-ALG-PS-03	Evaluate algorithms for efficiency, correctness, and clarity, using metrics or test cases.	
HS-ALG-PS-04	Describe the differences between deterministic and probabilistic algorithms.	✅
HS-ALG-PS-05	Evaluate AI-generated output to assess bias, accuracy, and potential harms.	✅
HS-ALG-ML-06	Justify the selection of a type of AI algorithm to accomplish a task.	
HS-ALG-ML-07	Evaluate training data by examining its source, quality, representativeness, potential biases, and privacy implications.	
HS-ALG-ML-08	Develop a machine learning model for a chosen task using appropriate data and tools.	✅
HS-ALG-IM-09	Design a computing technology using human-centered design principles.	
HS-ALG-IM-10	Evaluate the ethical implications, societal impacts, and potential biases of rule-based and data-driven algorithms.	✅
HS-ALG-IM-11	Articulate the values embedded in the design of an algorithmic system.	✅

Programming

Identifier	Standard	Fully Aligned?
HS-PRO-PD-12	Create a modular program that uses procedures, external libraries, or objects to improve reusability and readability.	
HS-PRO-PD-13	Use documentation, libraries, application programming interfaces (APIs), and other tools in program development.	
HS-PRO-PD-14	Apply appropriate attribution of intellectual property when developing a computing technology.	
HS-PRO-PD-15	Collaborate on a programming project using a defined workflow that includes design documentation and clear task roles.	
HS-PRO-VD-16	Create a program that uses appropriate data structures to store, access, and manipulate data.	
HS-PRO-RD-17	Analyze how a segment of code works, including the role of parameters, return values, and data structures.	
HS-PRO-RD-18	Evaluate AI-generated code for accuracy, reliability, and alignment with program requirements.	✅
HS-PRO-TR-19	Evaluate a computing technology's alignment with design specifications and responsible design values, including its correctness, effectiveness, and user experience.	
HS-PRO-TR-20	Refine a computing technology based on user feedback, testing results, and responsible design values to improve its effectiveness and impact.	✅

Data & Analysis

Identifier	Standard	Fully Aligned?
HS-DAT-DC-21	Use a computational tool to generate simulated data that fits certain parameters for use in a simulation.	✅
HS-DAT-DC-22	Create a data dictionary that describes the name, type, and allowable values for each attribute and the logical relationships between variables in a dataset.	
HS-DAT-DC-23	Use a computational tool to clean and organize text-based data.	
HS-DAT-DC-24	Evaluate different approaches to verifying consistency and compliance with expected data types, values, and ranges.	
HS-DAT-DI-25	Create a data visualization of a multivariate dataset to answer a question or make a classification or prediction.	✅
HS-DAT-DI-26	Evaluate a data simulation or visualization to answer a data question, inform decision-making, and identify potential limitations.	✅
HS-DAT-IM-27	Evaluate the societal, environmental, and ethical implications of large-scale data collection and processing, including within AI applications.	
HS-DAT-IM-28	Debate the efficacy of a policy or regulation to ensure responsible data use.	

Systems & Security

Identifier	Standard	Fully Aligned?
HS-SYS-HW-29	Differentiate an operating system as a special type of software that manages both the hardware and other software components of a computing system, including handling memory and peripherals.	
HS-SYS-HW-30	Demonstrate the capabilities and limitations of a physical or simulated computing device to address a task or problem.	
HS-SYS-SE-31	Identify different types of cybersecurity and physical security measures and the trade-offs for users, data, and devices.	✅
HS-SYS-SE-32	Classify the causes and impacts of security breaches and social engineering attacks for individuals, industries, communities, and governments.	
HS-SYS-SE-33	Formulate a solution to a security flaw in a given system.	✅
HS-SYS-NT-34	Diagram a network of computing systems, including hardware and software.	
HS-SYS-NT-35	Analyze how the internet functions as a network of networks and how it differs from other types of networks.	
HS-SYS-IM-36	Evaluate the rationale behind a law or policy governing the design and use of computing systems.	
HS-SYS-IM-37	Investigate how computing systems and infrastructure impact society and the environment, identifying who is affected and why.	✅

Computing & Society

Identifier	Standard	Fully Aligned?
HS-SOC-HI-38	Analyze the historical trajectory of a specific computing technology and how its development is linked to societal and environmental factors.	
HS-SOC-HI-39	Propose modifications to an existing policy or piece of legislation that encourages ethical innovation and minimizes societal risks associated with technology.	
HS-SOC-ET-40	Evaluate the fundamental technological differences between an emerging technology and established technologies and how those differences influence computing.	
HS-SOC-ET-41	Evaluate the societal and environmental impacts of an emerging technology, including those that lead to inequities in access and outcomes.	✅
HS-SOC-ET-42	Design a conceptual solution to a real-world problem using an emerging technology, analyzing its potential benefits and harms.	✅
HS-SOC-HU-43	Evaluate how human choices in using, designing, deploying, and regulating computing technologies have risks, benefits, and long-term impacts.	✅
HS-SOC-HU-44	Debate perspectives on differences between human and artificial intelligence and their implications for consciousness, ethics, and human responsibility.	✅
HS-SOC-CE-45	Analyze how diverse teams of people use computational thinking and computing technologies to solve problems and express ideas.	✅
HS-SOC-CE-46	Connect computing knowledge and skills acquired to students' personal goals and career aspirations.	

Alignment to High School Specialty Standards

Artificial Intelligence – Specialty I

Identifier	Standard	Fully Aligned?
S1-AIN-DD-01	Analyze AI systems to differentiate the types of problems they address.	
S1-AIN-DD-02	Modify AI system training data to improve fairness and accuracy in outputs.	✅
S1-AIN-DD-03	Create an application using a prebuilt supervised learning model to make a classification or prediction.	
S1-AIN-DD-04	Compare data representations and how representation choice constrains applicable algorithms.	✅
S1-AIN-DD-05	Evaluate whether an AI or non-AI computational solution is appropriate for a real-world problem.	✅
S1-AIN-DS-06	Examine how data flows through a neural network structure.	
S1-AIN-DS-07	Apply data acquisition, cleaning, and transformation techniques to prepare data for AI analysis.	
S1-AIN-HR-08	Plan safeguards for AI systems that protect human well-being and privacy while ensuring meaningful human involvement in decision-making.	
S1-AIN-HR-09	Analyze the potential biases and limitations of AI systems.	✅
S1-AIN-HR-10	Analyze the environmental impacts of widespread AI adoption.	✅
S1-AIN-PP-11	Integrate a prebuilt AI agent into an application.	
S1-AIN-PP-12	Analyze how AI tools shape user experiences for people with diverse backgrounds and characteristics.	
S1-AIN-PP-13	Assess how unauthorized data collection has influenced the practice of training AI models.	✅
S1-AIN-PP-14	Evaluate how ethical implications of AI have changed over time.	✅